Florida Keys National Marine Sanctuary Advisory Council

LARGE VESSEL WORKING GROUP
Florida Keys Community College, Key West
May 22, 2003

In Attendance:
Bob Smith - Facilitator, Florida Keys Community College, Key West
Billy Causey - Sanctuary Superintendent, FKNMS
Fritz Wettstein - Co-Chair FKNMS Lower Region Manager
Capt. Don Kincaid – Co-Chair, SAC and Stars & Stripes
Sandra Walters – Sandra Walters Consultants, Inc.
Dr. Bill Kruczynski – U.S. Environmental Protection Agency
Prof. Kelly Rankin – Stevens Institute
Glenn Schuster – U.S. Army Corps of Engineers
Charlie Fellows – Water & Air Research Inc.
Peter Cone – Commercial Diver
Pete Keogh - Commercial Diver
Nick Malinowski – Recreational Fishing
Don DeMaria – Marine Life Collector
Robert Maguire – Bar Pilots Association
Chuck Fitzsimmons – Bar Pilots Association
Ron Demes – Key West Naval Air Station
Jim Hudgens – CZR Inc.
Antonius Vourtsis – Royal Caribbean Cruise Lines
Steve Collins – Royal Caribbean Cruise Lines
Rich Pruitt – Royal Caribbean Cruise Lines
Dan Probert – Key West Port Advisory Council
Duncan Mathewson – SAC, Submerged Cultural Resources
Erwin Wunderlich – U.S. Army Corps of Engineers
Fran Decker – SAC, Middle Keys Citizen-at-Large
George Garrett – Monroe County, Marine Resources
Gus Rios – Florida Department of Environmental Protection
Mark Robson – Florida Fish & Wildlife Conservation Commission
Michael Bailey – National Marine Fisheries Service
Richard Grathwohl – SAC, Marathon Guides
Jim Colvocoresses – Florida Marine Research Institute
Joseph Mujwit – Carnival Cruise Lines
Michelle Paige – Florida-Caribbean Cruise Association
Prof. Michael Bruno – Stevens Institute
Charles Yentsch – Bigelow Laboratory
Cheva Heck – FKNMS
Lt. Robert Kamphaus – FKNMS
Carolina Sullivan – FKNMS
Fiona Wilmot – FKNMS

I. Welcome, Introduction, Announcements.

Fritz Wettstein welcomed the Working Group to the third meeting, held on Maritime Day in Key West. He introduced co-chair Don Kincaid, facilitator Bob Smith and Sanctuary superintendent Billy Causey. Co-chair Nancy Klingener sent an apology for absence. He announced that he is returning to Tallahassee and will be replaced as Lower Region manager by Anne McCarthy of Florida Department of Environmental Protection. Lt. Robert Kamphaus of NOAA Corps continues as Lower Region Assistant Manager.

II. Review January, 30, 2003 Meeting Minutes; Review Agenda.

Fritz Wettstein reviewed the meeting minutes and the current agenda. There were no amendments.

III. Review Working Group Ground Rules

Bob Smith reviewed the ground rules established at the first meeting and welcomed the group to the Florida Keys Community College.

IV. Panel 1: Key West Harbor Turbidity Studies. Fritz Wettstein, Moderator

Dr. Bill Kruczynski, US EPA
Sandra Walters, Sandra Walters Consultants, Inc.
Charlie Fellows, Water & Air Reserch, Inc.
Prof. Kelly Rankin, Stevens Institute; Bigelow Laboratory
Glenn Schuster, US Army Corps of Engineers (by speaker phone)

Dr. Kruczynski gave an overhead presentation on basic physics and chemistry of turbidity. He described how to measure turbidity, whether from organic or non-organic sources and elaborated on acute and chronic impacts to the biota. He noted that some corals are not negatively impacted by turbidity, though all corals are affected by sedimentation to some degree. In conclusion he quoted Rogers (1990) on the effects of turbidity on coralline systems:

1. lower species diversity
2. less live per cent coral cover
3. changes in the composition of the community to more forms of species that are resistant to smothering
4. smaller corals, smaller community heads
5. affects recruitment; recruits cannot settle without prepared barren substrate
6. slower growing corals
7. corals exhibit a zonation based on depth which is in part due to limitations, with an upward shift of depth zonation
8. (contentious) greater abundance of branching corals in turbid systems.

Dr. Kruczynski gave a second brief presentation on some turbidity studies in the Florida Keys. He said that due to extensive dredge and fill operations in the Keys in the early 1970s average visibility on the outer reef dropped by over 100 feet and as a result a moratorium was placed on those activities. Subsequent studies factoring in weather and location showed nearshore corals to be more affected by turbidity than offshore corals.

He noted that there are documented violations of state water quality standards in Key West Harbor as cruise ships come in and dock,

Sandra Walters gave a PowerPoint presentation summarizing research conducted by her company in 1998 for the Key West Bar Pilots Association on the impacts of ships and turbidity in Key West Harbor. The study involved a literature search, interviews with coastal scientists with expertise in south Florida and a record of 50 randomly selected stations in Key West Harbor. The record was made by Dr. Jim Fourqurean's group from Florida International University using the same benthic monitoring methodology they use in the rest of the Sanctuary. Dr. Fourqurean concluded that habitats in Key West Harbor looked no different than similar areas elsewhere in the Keys, such as Moser Channel, and he saw no indication of ship-caused turbidity causing any harmful effects. Ms. Walters reached the same conclusion through her own research.

Charles Fellows noted that turbidity is an important water quality parameter that is not necessarily caused by suspended solids. He conducted the September 2001 turbidity study of Key West Harbor for the Army Corps of Engineers to determine baseline conditions of turbidity caused by weather and ships, the results of which are available at http://pillar.saj.usace.army.mil/pd/envdocs/monroe/KeyWestHarbor. The study involved six stations around the harbor and a couple in the North West Channel and constantly re-calibrating the instruments. For two of the study days there was a small craft advisory with extremely rough, turbid water. Some ship arrivals and departures were recorded.

Glenn Schuster added, in agreement with Mr. Fellows, that dredging is not typically a turbidity intensive event with a typical increase from 2 to 8 nephelometric turbidity units (NTUs) 150 meters from the point of discharge. He noted that "background" should be a dynamic term that refers to the naturally occurring turbidity at a given time under given conditions, and should not be stated just as a number.

Dr. Kelly Rankin described data collecting activities that she is undertaking with Dr. Yentsch at the Naval Research Laboratory off Fleming Key. They are taking turbidity samples at a rate of two samples per second for 15 minutes every two hours, as well as collecting radiance, air pressure, air temperature, wind speed, wind direction and precipitation data. They are seeing tidal effects on the order of six hours, diurnal effects on the 12-24 hours and turbidity due to algal blooms, re-suspension and advection. She stressed the importance of long-term, high frequency data sets to understanding the flushing mechanisms operating in Key West Harbor and said that the acute as well as the chronic effects of suspended solids should be studied to determine which are the most important, as there are a lot of different time scales involved.

During the question and answer session for the panel that followed these issues were addressed:

- that the FIU study took two and a half days and is synoptic
- that the 50 study sites have not been studied before or since and that GPS numbers are available for all of them

- that there is more quantitative data available from the FIU study that has not been analyzed

V. Panel 2: Key West Harbor Turbidity Observations from Underwater and Topside. Don Kincaid, Moderator.
Bob Elkins, Commercial Fisherman
Nick Malinowski, Recreational Fisherman
Pete Keogh, Commercial Diver
Don DeMaria, Marine Life Collector
Peter Cone, Commercial Diver
Bob Maguire, Key West Bar Pilots

Don Kincaid introduced the panel by noting the difference between short-term scientific sampling events and the experience gleaned from days and years on the water.

Bob Elkins, a diver and fisherman for 25 years in Key West, described conditions collecting antique bottles under Mallory Square after the first cruise ships arrived in Key West Harbor in the early 1980s. He said that, as the deepest part of the harbor that was not dredged by the Navy, it contained a trove of historical artifacts that were exposed when the cruise ship propellers blew the sediments aside. He said that bottle diving is pretty much over now in Mallory Square. Mr. Elkins said that he backs the dredging program, but expressed serious concerns over beach re-nourishment programs in general, and the project recently undertaken on Tank Island in particular, as a source of sediments that might re-fill the dredged area. He observed that the Keys do not have many natural beaches. Mr. Elkins concluded by saying that he hopes that there will be a careful archaeological dig conducted as part of the dredging project to save some of Key West's history.

Nick Malinowski, a retired airline pilot and sports fisherman who came to Key West in 1974, agreed with what Bob Elkins said. He said that an area called East Triangle has been affected by cruise ships leaving the harbor. The area used to contain some big coral heads which made it a great fishing spot; now the corals are all dead. He concluded by saying that this has happened pretty much up and down the Channel.

Pete Keogh, who has been diving the area for 25 years, is more concerned with sedimentation in the Lakes, and out in Hawk Channel toward the Gulf, which started in1986 when the channels were lost in the I95 storm. This provided a substrate for *Caulerpa racemosa*, an insidious alga that has replaced a lot of the sponge beds and *Oculina* corals that used to exist in relatively clear water in Lakes channels. The sponges have also been impacted by sediment in the last five or six years as have gorgonians and corals that don't grow along the edges of channels. He compared the effects of Hurricane Georges which caused problems but wasn't really bad, with what happens now with the slightest wind when the water gets really dirty. He said he could not tell whether the increased sedimentation is due to a cruise ship or a wind event. Mr. Keogh recommended dredging the *Halimeda* sand and the *Caulerpa* out of the Lakes channels and returning the habitat to hard bottom, with *Oculina* habitat for juvenile angelfish.

Don DeMaria, who has been collecting tropicals in the Keys since 1978 but has been visiting the Keys since junior high school in the mid-60s, stopped diving Key West Harbor years ago after the big ships started using it, as the visibility was so poor he could not spearfish. He said that it is not just the harbor area but Kingfish Shoals to the west, and southwest of Sunset Key where the visibility is so poor that he cannot work. He noted that there must have been some days of 300 foot visibility to average 175 foot visibility back in the late 1960s. Mr. DeMaria observed that he had been diving the reef the day before and noticed large barrel sponges covered in silt were starting to die off though he could not say whether the silt was killing them or whether they were too stressed by some other factor to remove the silt. He noted that organisms in Hawk Channel that are accustomed to silty water and temperature change look better than the reef, because they have had a very long time to adapt to those conditions. He concluded by saying that we are stressing out not only the corals, but people like himself who are trying to make a living out there and cannot see what they are doing.

Peter Cone, who has been a commercial lobster diver in the Keys since 1972, said that the visibility in Hawk Channel where he used to dive coral humps and patch reefs until the 1980s was relatively good. Then he noticed the visibility dropping much more frequently, with much less wind and huge coral heads of up to seven foot in diameter getting covered in silt and dying. He considers the spread of silt is even more extensive to both east and west of Key West Harbor and is affecting the numbers of sponges and juvenile fish on patch reefs in Hawk Channel. Mr. Cone said that about a mile east of the main ship channel, when a ship leaves the harbor, visibility can drop from eight feet to about 18 inches. He concluded by observing that lobsters are avoiding areas with large amounts of silt.

Bob Maguire with Key West Bar Pilots read from the attached presentation on what pilots do for a living, and what they see from up on the ships. He concluded by saying that maintenance dredging around Mallory Square, widening Cut B and installing range markers and lights for Cut B would allow the pilots to exit and enter the harbor at slower speeds, which would help reduce the level of turbidity generated by the ships.

Pete Keogh added that in the mid-70s the limiting factor for diving was wave height and not visibility; now it is visibility. He said that bottles in North West Channel are no longer encrusted with corals which he attributes to increased turbidity in North West Channel.

Don DeMaria added that he has to remove silt from his live rock reef west of Key West continuously to keep it growing.

Nick Malinowski added that in Hawk Channel out towards the Marquesas and east towards Sugarloaf it is still possible to catch cobia and permit on the coral heads, but not in between.

During question and answer session, the following issues were addressed:

- that comparing dive conditions between Key West and other parts of the Keys, out towards the Marquesas and up towards Big Pine conditions improve
- that the water and fauna past the Marquesas are rather different to what exists along the Keys
- that there is a need to better understand water circulation patterns at a large scale in order to understand local instances of turbidity
- that the first beach fill took place in the 1950s at West Martello Tower with sand from the Bahamas
- that sponge die-offs have occurred in the Lower Keys before the cruise ships started visiting
- that tarpon fishing in Key West Harbor is still good, although the fish move out when the cruise ships move in
- that no-one fishes the dredge wall south of Tank Island anymore because all the sediment from Christmas Tree Island and Tank Island has been blown into dunes that have smothered the bottom.

VI. Break

VII. Panel 3: Proposed Navy Harbor Dredging Project. Billy Causey, Moderator
Ron Demes, Key West NAF
Jim Hudgens, CZR Inc.

Billy Causey introduced the panel by saying that the proposed dredging project is one of the solutions to some of the sediment problems that not only the Sanctuary staff, but also federal, state and local authorities have been working on with the Navy and the Corps.

Ron Demes said that the project was initiated in October 2001 with a new Training Resource Strategy (TRS) that required doing battleship training and employment training on the east coast of the United States. He said that Key West is an important component of the TRS and the agreement between the Navy and the City of Key West is for three ships for port calls three times a year, plus emergency repairs for three ships about three times a year. In order to bring in the frigates, minesweepers, minehunters, patrol craft, cruisers and destroyers safely, it is essential to dredge the harbor. He said that in addition to the dredging operation and pier rehabilitation, a new refueling capability has been added on Pier D2 North at the Coast Guard pier which means that ships can be directly re-fueled safely on site rather than trucking fuel in from Boca Chica.

Jim Hudgens reminded the group that this is a 34 foot maintenance dredge project that will utilize the original channel footprint. He described the current status of the project with regard to permits and advertising. The actual construction will start December 1st and the project will run from between 12-18 months. He said the recently completed environmental assessment will ensure minimal resource disturbance. Mr. Hudgens explained that the dredged material will be moved by pipeline up Hawk Channel to Boca Chica Channel, thence up the navy channel to the marina and overland to pits in

Rockland Key. The material will be placed in one of the pits at Rockland Key that is open to the bay. It is a 35 foot pit that will be filled to a finished depth of four feet, with good quality sand on top and replanted with seagrasses, to get some beneficial uses of the material. A dyke will be erected across the existing opening with turbidity curtains both inside and outside. After replanting, the dyke will be removed. There will be continuing resource evaluations which are to be approved by the Sanctuary, the Corps and DEP that will involve both biological and turbidity monitoring by a full-time monitoring team. There will be public workshops scheduled throughout the construction process, with one in July and one just before construction in December.

Billy Causey noted the level of cooperation, particularly with regard to protecting the resource, between all the agencies working on the project. He said that everybody wants to go into this with eyes wide open, realizing that there could be physical impact but that the greater good is after the project is finished.

VIII. Public Comment

There was no Public Comment.

IX. Working Group Response to the City of Key West Cruise Ship Proposals. Billy Causey.

Fritz Wettstein introduced the subject, noting that the Last Stand forum on the cruise ship industry as well as the City of Key West's summit addressed issues beyond those considered by the National Marine Sanctuary. One matter for common ground was the question of vessel pumpout.

Billy Causey noted that this is a matter between the City and the cruise ship industry.

Discussion among group members followed concerning the Port Advisory Board's decision to not support the pumpout for cruise ships, assurances from Royal Caribbean and Carnival Cruise Lines that only AWT water is dumped well away from the reef, and that deep-injection wells take AWT water (which is one step away from drinking water) down to 3300 feet below a confining zone, with the nutrients stripped out.

Return to Proposed Navy Harbor Dredging Project.

Billy Causey invited questions for the panelists.

During the question and answer session, the following issues were addressed:

- that independent monitors have the ability to halt the dredging if any damage occurs
- that the pipe is going to be 18-24 inches in diameter, around 15 miles in length, lying where possible on the bottom
- that effects on migrating lobsters have been considered
- that a storm analysis is being undertaken for the pipeline

- that there will be one pumping station along the pipe
- that the dredge will commence in Truman Harbor, then move to Cut C, then Cut B, then Cut A and then the main shipping channel
- that the final part of the dredge is the good sand that will be used to cap the pit at Rockland Key
- that the largest article that can go through the dredge is six inches and all material will be macerated
- that the slurry to move the material will be 85% water and 15% solids
- that the water will have been well-filtered before it enters Florida Bay as a requirement for fulfilling the DEP permit
- that the shipwrecks off Boca Chica are being taken into consideration
- that there have been some talks about an informally organized recovery of historical artifacts from Key West Harbor.

X. Issue Identification.

Bob Smith identified discharges, dredging, ship operations and harbor operations as well as the economic costs of ships entering the harbor as future issues for consideration by the working group, before taking recommendations to the full Sanctuary Advisory Council. It was agreed to reconvene in September.

XI. Meeting Adjourned: 5:15 p.m.

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